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JOIDES Resolution

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SC ENTIFIC OCEAN DRILLING

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Happening now... Expedition 400T: Transit and Dry Dock



written by Maya Pincus (USSSP), with contributions from Offshore Installations Manager Glenn Barrett, Operations Superintendent Kevin Grigar, and Laboratory Officer Eric Moortgat

Built in 1978, the *JOIDES Resolution* does not quite make it onto the list of <u>Top 10 Oldest Ships Still in</u> <u>Use</u>. espite that, surviving into her forties (and looking this good) requires regular stops for maintenance. Sometimes these check-ups involve work too involved to carry out at the same time as drilling and coring, so it becomes necessary to schedule a non-IODP tie-up in port. Expedition 400T, a designated period between scientific Expeditions 400 and 401, is the perfect time to make this happen. Here's what's going on as the ship and her crew prepare for the last few IODP expeditions:

Transit: The end of Expedition 400 (Northwest Greenland Glaciated Margin) brought the *JOIDES Resolution* to Reykjavik, Iceland on October 13th. On December 10th, <u>Expedition 401 (Mediterranean-Atlantic Gateway</u> <u>Exchange</u>) will begin in Amsterdam, the Netherlands. Transit began on October 16th, sailing into what would become much rougher-than-expected seas. For a couple days, swells often peaked above 5 m, and between the rocking, the rolling, the heaving, and the yawing, few on board experienced restful nights.

With no science party present, the berths were open and available to host a different crowd. This time around, bunks were filled by twenty STEM educators for the School of Rock October 2023 workshop. Over the course of ten days at sea, teachers toured the ship to learn about science and operations, then worked together to improve science and data literacy, standards alignment, systems thinking, and culturally responsive pedagogy in the <u>IODP educational resources</u> freely available online. School of Rock is documented in more detail on the <u>Expedition 400T website page</u>, and several participants led daily takeovers of the *JOIDES Resolution* X (formerly Twitter), Facebook, and Instagram accounts.



School of Rock group photo (Credit: Daniel Rudbäck & IODP JRSO).

Dry dock: The *JR* is scheduled to reside in Damen Shipyards Amsterdam from October 24th to December 10th, including three weeks in dry dock. In order to keep the ship insured and registered, hull survey and maintenance is required at minimum every five years. Of course, this cannot be carried out while the hull is underwater, so the *JOIDES Resolution* must enter dry dock, where water is drained out and the ship is set on blocks so that inspectors and engineers can access the exterior of the ship.

Some of the work that will take place during this dry dock is routine. For one, it is an opportunity to evaluate and touch



LEFT: Damen Shiprepair Amsterdam, where the JR will reside until Expedition 401 (Credit: Damen Shiprepair Amsterdam). RIGHT: A Siem crewmember works on a propellor during dry dock in 2018 (Image courtesy of Kevin Grigar & IODP JRSO).

up the anti-fouling paint on the outside of the ship. This special solution prevents corrosion, and more importantly, slows down the attachment and growth of aquatic organisms (such as algae or barnacles) that could latch onto the ship. The build-up of these uninvited hitchhikers can dramatically increase the ship's drag, slowing her down and accelerating the consumption of expensive fuel. It can also increase environmental risk due to the transport of invasive species.

The *JOIDES Resolution* has two propellors that must undergo inspection and maintenance every ten years. Usually the work is staggered so that only one propellor is affected at a time, alternating every five years, but during this tie-up both propellors will be removed for detailed inspection.

This dry dock also gives *JOIDES Resolution* Science Operator (JRSO) technicians opportunity to work on the sonar dome, which resides on the hull of the ship and is used to image the ocean floor. Recently the 3.5 kHz sonar ceased to function, and therefore must be repaired. Technicians hypothesize that the cause of the issue is a flooded junction box, which will be an easy fix one the sonar dome is removed from the hull.

Other maintenance: The drilling department will carry out several critical repairs. The top drive will be changed out for a spare on board, as the one currently in use is five years old and has an electrical issue that cannot be bypassed. During the tie-up, the faulty top drive will be sent out for repair and refurbishment, so that it can be reloaded onto the ship and act as a spare for future expeditions. Additionally, the hydraulic

and electrical umbilicals to the top drive will be changed out. Though nothing is wrong with these components at this point, the work is considered pre-emptive maintenance, as the current set-up has been in use, and therefore exposed to the elements, for five years now.

Smaller projects include repairs to one of the ship's seven generators, replacement of a pipe in one of the water-generating units on board, and restoration of carpet and tile in some of the cabins.

JRSO will stay busy applying new coats of paint to the floors of the laboratories, updating the lab manuals that are available online, and cross-training technicians to ensure that all lab roles can be filled at all times. Technicians are also taking measures to prepare for the impending demobilization of the *JOIDES Resolution* by taking inventory and determining what will be shipped back to Texas A&M University for future use.



Overview schematic of the sonar dome/cabling (Image courtesy of Eric Moortgat & IODP JRSO).

In the works... Expedition 401: Mediterranean-Atlantic Gateway Exchange

written by Kellan Moss and Erin Winick Anthony, Expedition 401 Onboard Outreach Officers

The first ever land-to-sea drilling project is set to sail this winter, as the JOIDES Resolution makes its way to the Mediterranean-Atlantic exchange gateway. This expedition is part of the larger Investigating Miocene Mediterranean-Atlantic Exchange (IMMAGE) Project—a collaboration between the International Ocean Discovery Program (IODP) and the International Continental Scientific Drilling Program (ICDP). The project will drill at three offshore sites in the Atlantic and Mediterranean. and subsequently at two onshore sites that target the fossil corridors that have been tectonically uplifted and



Primary and alternate drilling sites for EXP401 (Credit: Flecker et al., 2023).

preserved on land. Expedition 401 scientists will embark on this revolutionary journey to study the gateway and the secrets it holds from millions of years ago.

Today, the exchange of seawater takes place through a single gateway, the Gibraltar Strait, but around 8 million years ago there were two other gateways, one in northern Morocco and one in southern Spain. As millions of years went by the connections grew thinner and thinner until they closed, blocking the two exchanges. This event caused the Mediterranean sea level to fall by hundreds of meters and the water to become so salty that a layer of salt crystals more than 1000 meters thick, the "salt giant", formed across its seafloor. Around 5 million years ago a cataclysmic flood reconnected the Atlantic with the Mediterranean sea, terminating the salt giant formation and transforming the Mediterranean into what we see today.

These phenomenal events changed not only the chemistry of the ocean but also its circulation patterns, impacting the global climate. It may have contributed to a major episode of planetary cooling that led to



Climatic transport system linking the North African monsoonal system to thermohaline circulation in the North Atlantic. Red stars are the proposed IODP IMMAGE sites; red triangles are the ICDP IMMAGE sites. Arrows indicate surface and intermediate water masses. AMW = Atlantic-Mediterranean Water, LIW = Levantine Intermediate Water, ITCZ = Intertropical Convergence Zone. (Credit: Flecker et al., 2023).

permanent ice formation in the Arctic. Expedition 401 scientists seek to better understand and quantify these climate changes from the restricted water exchange and salt giant formation through analysis of the chemical and physical properties of the sediments preserved in and on either side of the fossilized gateways.

Led by co-chief scientists Rachel Flecker and Emmanuelle Ducassou, Expedition 401 seeks to better understand the exchange between the Mediterranean and the Atlantic Ocean during the most dynamic period of its evolution as a gateway and uncover these climate secrets buried beneath hundreds of meters of water and rock. During salt giant formation, Mediterranean water was up to ten

times more salty than it is today. In order to understand the climatic impact of this extreme high salinity overflow, Expedition 401 will collect core samples to recover plume sediment deposited before, during, and after salt giant formation to measure the changes to ocean circulation. The scientists on board will also reconstruct the chemistry of Mediterranean overflow water to model the consequences for the carbon cycle and global climate.

Some of the specific scientific objectives include the following:

- Identifying when the Atlantic first began to receive distinct outflow waters from the Mediterranean. Differences in the density of the two water masses result in generation of substantial current speeds and contourite drift formation on the continental slope.
- Understanding the Messinian Salinity Crisis, an extreme oceanographic event that had climatic consequences at local, regional and global scales.
- Testing hypotheses concerning the physics of ocean overflow systems in order to better quantify general ocean circulation models.

The first ever land-to-sea drilling project allows these scientists to explore and compare secrets of the Earth we have never been able to discover before. Follow the scientists on Expedition 401 as we uncover the climate changes of our past.

To learn more about Expedition 401: Mediterranean-Atlantic Gateway Exchange, visit the <u>expedition page</u> on the International Ocean Discovery Program website. Stay up-to-date with expedition news on the *JOIDES Resolution* <u>X (formerly Twitter)</u>, <u>Facebook</u>, Threads, and <u>Instagram</u>, and <u>IMMAGE X account</u>.

From the field... Using the power of physics to make meaningful connections and build community aboard the JOIDES Resolution

written by DaNel Hogan, School of Rock October 2023 participant

Every day I wear a simple necklace consisting of a nickel-plated steel 1.25" diameter welded ring and a 30" #3 ball chain. Beyond the one around my neck, I generally have anywhere from a couple of extra rings and chains to several hundred with me at any given time. Why? Because the necklace can actually be used to perform a physics trick! (And definitely don't use the 5-letter "M" word to describe it or I will haunt you. Though using the 7-letter "M" word is just fine-magical! After all, it has an explanation and anyone can do it. No magic or magician required.) So, what is this magical-looking physics trick? You simply hold the chain dangling from your index finger and thumb, bring the ring up from the bottom of the dangling chain so it is inside the ring, and then drop the ring. When performed with the correct technique, or sometimes with a little luck, the ring



Not a single person aboard the *JOIDES Resolution* during the Expedition 400T transit was able to avoid DaNel's physics trick (Credit: DaNel Hogan & IODP).

will not fall to the ground but catch with a neat little cow hitch/lark's head knot on the chain. At which point, one is obligated to call out with just the right high tone and enthusiasm, "Physics!" If, on the other hand, the ring should fall down to whatever surface is below it, one should call out in a low, sad tone, "Gravity."

How does this simple physics trick lead to making meaningful connections? Easy. I simply ask someone I encounter if they would like to learn a physics trick. This is almost always met with an affirmative and curiosity, judgment is passed if it is not, and the pHun begins. (Yes, that is how a physicist spells the word fun.) Soon, there is a bit of a ruckus as one or more people are learning the physics trick and rings are falling with shouts of "Physics!" or "Gravity" ringing out. In this way, one might loop in a few or many others to learn this entertaining physics trick. (Remember, it's not a magic trick, it's a physics trick.) Paired with the bonus of being able to remove the ring from the necklace chain while it is around your neck



with just the flick of your wrist, you are bound to impress your audience even more. But what is the pHun of showing others this demonstration of torque, rotational motion, conservation of angular momentum, inertia, and topology, if they can't take it with them to impress their family and friends? This explains why I always have several physics rings and chains on hand and will only be found without one around my neck if I have underestimated my daily interactions and have needed to relinquish the ring and chain I am wearing to a new physics enthusiast.

How is this physics trick related to the JOIDES Resolution, making meaningful connections, and building community? During my transit from Reykjavik to Amsterdam aboard the JOIDES Resolution for the October 2023 School of Rock as a participating educator, I slowly but surely introduced others aboard to this incredible phenomenon. And this did not just include other participants and organizers of the School of Rock program but also the International Ocean Discovery Program staff, from lab techs to IT folks, and the ship's crew and staff, from the captain and his mates to the drilling team, the kitchen staff, and everyone in between. In this way, I learned a bit more about the other people aboard this ship with me and gave them a little piece of joy and pleasant surprise each time they successfully dropped the ring and found it attached to the bottom of the chain. This led to showing them a few more of my favorite phenomena including how to turn someone into a human computer capable of discerning a number with just a few yes/no answers (which also looks like magic but is really just some #MicDropMath), learning about the <u>REAL primary colors</u> (which are not red, yellow, and blue), and magnetizing your finger to pull an object down through a column of water.

TOP: School of Rock participant Derrick Hearn masters the physics trick after only a few tries (Credit: Melisa Dettbarn & IODP). MIDDLE: Expedition 400T technicians show off their physics skills at port in Amsterdam (Credit: Eric Moortgat & IODP JRSO). BOTTOM: School of Rock participant Steve Kirsch teaches the physics trick to a restaurant employee in Amsterdam (Credit: Christine Hirst Bernhardt & IODP).

The meaningful connection-making and community-building comes from everything happening as a result of these interactions and the tactical serendipity that abounds. As the Chief Learning Officer for the Waters Center for Systems Thinking, my systems thinking heart grows a little bigger as I put the "Makes meaningful connections within and between systems" Habit of a Systems Thinker into full practice. I might walk into the mess hall and catch someone demonstrating and teaching another new physics recruit the physics ring and chain trick. Clay Furman, one of the engineers aboard - a wireline engineer, might be so inspired that he designs and refines a 3-D printed Physics Trick Automator 3000, my name for it, not his, a device which will hold the chain and drop the ring in just the right way to make it catch with just a slight push from your finger. I might hear "Physics!" as I am passing by the conference room or through a lab or by the kitchen or perhaps even a clang as the ring once again hits the floor with a missed attempt. I might hear stories from others in the program spotting someone doing the ring and chain trick or hearing them shout out "Physics!" from back in the kitchen late at night. I might be greeted in the hallway by someone passing with "Physics!" even if they are not doing the trick. I catch the eye of someone and say "Physics!"

MAKES **MEANINGFUL CONNECTIONS** WITHIN AND BETWEEN SYSTEMS



The <u>Habits of a Systems Thinker</u> help learners understand how systems work and how actions taken can impact results seen over time. DaNel's physics trick clearly exemplified the habit of "making meaningful connections within and between systems" (Credit: Thinking Tools Studio).

and get the same response back. In fact, I am certain if you asked some folks on the ship who DaNel was, they may know. But, if you ask them about the physics woman, they would know right away who you were talking about with certainty.

The meaningful connection making and community building did not just occur on the ship either. It started on the airplane ride to Iceland, when the lucky person sitting next to me got to learn about the physics ring and chain trick and continues anywhere and everywhere I go. High school students and teachers in Borgarnes, Iceland at <u>Menntaskóli Borgarfjarðar</u>; the owner and manager of a restaurant at <u>Arnarstapi Hotel</u> on Snæfellsnes Peninsula in Iceland; the tour guide and bus driver who showed us sights along the Golden Circle and southern coast of Iceland; our tour guide in Amsterdam; the staff and a few unassuming guests in the restaurant we ate at in Amsterdam; and the driver who took me to the train station the morning I departed Amsterdam, and on and on—meaningful connections were being made and community was being built at every stop and turn along the way. And I get even more joy knowing how many of these people who walked away with a new necklace will excitedly share this phenomenon with their family and friends, broadening the impact, connection, and community associated with this simple physics trick to scales I am sure I cannot fully fathom—what a pleasure. Physics!

How to... Share your science online

In 1953, the clinical psychologist and researcher Anne Roe said *Nothing in science has any value to society if it is not communicated*. There are many ways for scientists to communicate their work, through peer-reviewed journal articles to lectures, conference presentations, and even in the news. However, there is one still underutilized arena that has potential to bring science to the masses: the Internet.

According to Search Engine Journal, over 4.8 billion people worldwide use at least one social media platform. From April 2022 to April 2023, social media platforms gained over 150 million new users, meaning that audiences for content on these platforms are constantly growing. Scientists who are active on social

media are able to reach millions of people with each post to help educate the public and combat disinformation. It may feel intimidating to enter into this space, but the tips below can help you go from shy to savvy in no time.

- Make your content stand out: Social media users tend to scroll through content quickly, sometimes barely even processing what they see. Make sure to include attention-grabbing visuals that make viewers want to stop and learn more. Studies have shown that images with multiple elements (ex: people AND a lab instrument) are more engaging. Consider using a free graphic design website like <u>Canva</u> to help with layout, color, and design.
- **Diversity is key:** No one wants to see the same thing over and over and over. Get creative with how you share information by posting pictures, videos, infographics, and links. You can even play around with the types of pictures and videos you post! For example, you could alternate between showing people, places, and things, or you could switch between self-facing and outward-facing videos.
- **Know your audience:** Different platforms appeal to different groups of people. TikTok is most most popular among younger audiences who crave fast-paced, engaging videos. Instagram appeals to Gen Z and Millenials interested in beautiful photography. X, the platform formerly known as



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Twitter, is best for people of all ages who like to participate in conversations about current events. Facebook is the longest-form platform, appealing to older users interested in learning more about art, culture, and history, and forming connections with people who have similar interests.

- **Use hashtags:** Hashtags are a way to alert people to posts about topics that interest them. Use a • variety of hashtags, ranging from specific (ex: #microfossils) to general (#science), to get your post into more users' feeds. Be careful through-there is a such thing as too many hashtags. Use 5-15 hashtags in posts on Instagram and TikTok, 2-5 hashtags in posts on X (formerly Twitter), and 1-2 hashtags in posts on Facebook.
- Join a community: The more active you are on social media, the more likely people are to find your posts. In addition to creating your own content, make sure to engage with others. You can comment, like, share... But by asking questions and adding your ideas to other people's posts, more users will visit your pages to learn from you.



JOIDES Resolution Posted by Michelle Renee Oct 8 · 🚱

Overnight, the most beautiful polar phenomenon danced overhead 💚 ... See more



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JOIDES Resolution @TheJR · Oct 12 Promote Wowee! A portside gale force wind is rocking & rolling the JR. Shelved items were tossed down. Dinner will be 30 minutes later than usual, to allow time for clean up. #IODP



Promote





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FEATURED VIDEO

Discovery on Deck: Ice Navigation

The recently concluded Expedition 400 spent many weeks navigating around icebergs off the coast of western Greenland. Learn how the Ice Navigators tracked the 'bergs and kept everyone safe on board.

- Propose an Ocean Drilling Legacy Asset Project (LEAP) (Deadline: 1 November 2023; learn more here)
- Submit site data to Site Survey Data Bank
 (Deadline: 1 November 2023; learn more here)
- Submit a workshop proposal (Deadline: 4 December 2023; learn more here)
- American Geophysical Union Fall Meeting

 (11-15 December 2023; San Francisco, CA, USA; learn more here)
- Apply for a Schlanger ocean Drilling Fellowship
 (Deadline: 22 December 2023; <u>learn more here</u>)

SCI COMM RESOURCE OF THE MONTH



Did you know that there's a Scientific Ocean Drilling video game?! In Stories from the Cores, you can control an adorable avatar to learn about some of the amazing discoveries found in cores. Ice age megafloods! Dinosaur destruction! Life below the seafloor! And more!

Stories from the Cores

Spotlight on... Jacob C. Robinson

written by Maya Pincus (USSSP)

I was lucky enough to meet Captain Jake Robinson on my very first day aboard the *JOIDES Resolution*. Well, it might sound lucky to you, but that means you don't know the story.

The first interaction I ever had with Captain Jake was on my first day aboard the *JOIDES Resolution*, when he yelled at me for climbing a ladder.

Credit: Jake Robinson

I, ever the rule-follower, was surprised and terrified by this admonition, as there was absolutely no sign saying I couldn't climb the ladder (and believe me, I checked). But in my chagrin at having been chastised (publicly, no less!), I avoided him at all costs for the next several weeks.

Given that initial impression, it says a lot about Captain Jake that he was willing to sit down with me for an interview two years later. It also says a lot about him professionally—he takes his job, especially the safety part, very seriously. And you know what? I've been on the *JR* three times since then, and not once have I gone back to that ladder.

But I'm getting ahead of myself. Just how did Jake become the captain of this esteemed ocean-drilling research vessel? Well, aside from a seven-year foray into maritime law, the path that he followed to get here is remarkably direct.

It all started with a sailboat. When Jake was in high school his father bought the vessel "not exactly on a whim, but close enough." This was the point in Jake's life when, like so many other young people, he found himself looking toward the future not quite sure what he wanted from it. One day, a conversation with his father about an old buddy quickly changed that: Jake learned that the man had gone off to the federal maritime academy to become a cruise ship captain, and for Jake, "it sounded good to me, like 'I can do that!" Soon after that realization a recruiter from California Maritime Academy visited his high school, and the rest was history.

From what I understand, the career path to becoming a ship's captain involves many cycles of coursework and test prep, licensing exams¹, and time at sea to build maritime experience. One of the benefits of attending a maritime academy, though, is "pretty much all of us, the vast majority at the academy, went there to get a specific job. We weren't there to 'find ourselves,' we were there to do the work, get the certification, and get the job."

¹ Out of all the licensing tests he's taken—which is a lot, as each "exam" consists of around ten separate tests—Jake only had to retake two. The first was a bubbling error on the Scantron sheet (he provided the correct answer on his worksheets!), and the second was a misunderstanding by the test administrator.



TOP: From left, Expedition 334 Third Mate, Chief Mate, and Second Mate Robinson (Credit: John Beck & IODP JRSO). BOTTOM: Captain Robinson and the Second Mate look over the charts and maps on the Bridge during Expedition 379 (Credit: Christine Siddoway & IODP). And do the work he did. After four years at the maritime academy, Jake graduated with his Third Mate license, but any relief that came with this accomplishment was subdued by the fact that it happened at a time when shipping jobs in the US were scarce. His only option was to take a job with an oil drilling contractor, but as the ballast control operator on a semi-submersible rig, he racked up maritime experience with limited opportunity to log career-advancing sea time. All he did was "sit in a windowless control room and keep the rig level."

Given the disconnect between his expectations and experience, Jake found himself only two years in and ready to quit. Good thing for us he's not really the quitting type. Instead, he put in a request for transfer to a very special ship. Thus begins the beautiful and enduring relationship between Jacob C. Robinson and Science Research Vessel *JOIDES Resolution*.

It was 1998 when Jake first set foot on the *JR*. It's strange to think of him as anything other than *Captain* Jake, but on this first expedition, in the role of Third Mate he was serving as a proper ship's officer for the first time. That changed quickly enough—within a year he was promoted, and "I forget the dates and how long it was, but I was Second Mate for quite a while."

This is where I should confess that prior to my conversation with Jake, I knew almost nothing about the processes and hierarchies of maritime authority. What was supposed to be an interview about his life and career ended up being just as much a lesson in ship command structures. I learned that after a few years working as Second Mate, at just 26 years old Jake was still considered "pretty young" to be promoted again (the Chief Officer's position carries a lot of responsibility on board the *JR*, and he was still one of the youngest members of the ship's crew). Despite that, with a captain ready to retire and a Chief Mate moving to a higher rank on the opposite crew, suddenly

management was "kind of in a bind. They said 'You wanna be a chief mate on your next trip? Go get your license.'"

It turns out that the two months in between expeditions is all you need to take care of this sort of thing. Jake signed up for a month-long test prep course, pulled a couple all nighters to study, then spent five days taking the tests. It sounds like a lot, but back then "I was young and single" and, of course, he crushed it². After another year at sea (though due to new hires he was bumped back down to Second Mate), he had earned enough sea time to take the qualifying exams for his Master license, which would make him eligible for captaincy.

^{2 &}quot;Also," he added, "back then my hobby was studying for coast guard tests." Side note: Captain Jake is hilarious, but his humor is drier than the *JR*'s hull during dry dock. Another gem? When I asked him about his availability for an interview on the second day of the transit, his response was "I should still be onboard at that time. No problem."



LEFT: Bosun Leo Yaun and Chief Mate Robinson test run the beacon recovery craft during Expedition 352 (Credit: Tim Fulton & IODP TAMU). RIGHT: Chief Mate Robinson (right) poses with the day shift crew and new *JOIDES Resolution* mascot during Expedition 346 (Credit: William Crawford & IODP TAMU).

For the second time in his life, Jake timed a major life achievement with an inconvenient circumstance. Right around when he earned his Master's ticket, the contract for scientific ocean drilling operations with the *JOIDES Resolution* was nearing its end, and debates were ongoing about whether it would be renewed. As Jake describes that inflection point, "I was kind of wondering what I was going to do for the rest of my life, so my friend talked me into going to law school." By now you've probably figured out that when Jake sets his mind to something, he gets it done. Especially if it involves passing a test. Within three years, he had taken the LSATs, earned a law degree with a certificate in maritime law from Tulane University, and spent the next three years as a practicing lawyer. It's a shame that, "After that the world economy hit the skids, there wasn't as much shipping, fewer ships were having issues, so there wasn't as much maritime work. Without enough work, I was getting kind of bored with it, and looking to go back offshore." Jake called up old his old manager for a recommendation, who responded with the news "your old job is coming open in a few months, would you like it?" Jake took the job as Second Mate in 2010, worked his way up to become Captain of the *JOIDES Resolution* in 2017, and has been there ever since.³

With all these years at sea, you might be wondering just how many expeditions Jake has sailed on. I know I was. The answer? A big shrug. (When the Chief Engineer heard me ask that, he told me all I needed to do was count the logos in the stairwell and I'd get my answer.)⁴

Whether or not it's a result of all the time spent staring at the ocean, Captain Jake is now a person who is calm, pensive, intelligent, and philosophical (but I can't emphasize enough—also *really* funny). He doesn't speak loudly, but people listen. He pays attention to what's going on around him, even when it goes beyond his job description. When I asked him if there were any particular expeditions that stood out to him, he first⁵ described two high-latitude cruises which, in addition to being challenging for the need to constantly evade icebergs, were "absolutely, stunningly beautiful."

Other than that brief stint on the semi-submersible oil rig, the *JOIDES Resolution* is the only ship Jake has ever worked
 This is highly unusual in his field. It's kind of funny: "I'm a US citizen, I went to a US academy, but I've never sailed a US ship."
 Related to the amount of time Jake has been on this ship, I learned that there's only two places on the *JOIDES Resolution*

where Jake hasn't been: inside the fuel settling tank, and the tank of the marine sanitation device where the ship's sewage is processed.

⁵ Well... the *first* first thing he said was "My favorite story? I can't tell you that for this article!" but *then* he talked about the high-latitude expeditions.

He also makes a point to keep himself informed of the science taking place on his ship. He regaled me with tales of virus fossils and extraterrestrial biomarkers, of Milankovich cycles and mass extinctions. In fact, he's so in tune with the program that a question he asked once influenced the direction of a young scientist's entire research project.

Though his initial response to my question about what he does for fun was "not a lot," I eventually found out that sometimes he attends science pub talks where he is able to put his career to good use. Referring to a lecture about life on other planets, he said to me, "Yeah, a lot of that was based on stuff we found here on-board through deep sea coring. Things I heard discussed in the labs or in the galley. It was kinda fun!"

He's been at it long enough to fully capture the spirit of scientific ocean drilling. On one hand, "It's really kinda fun to be involved in something that's so unique so interesting. Going out to the middle of absolute nowhere in the very deep water and picking stuff up is cool to see." But at the same time, "Every now and then they'll pull up something beautiful, but usually it's all grey."

When he's not at sea, Jake thinks of himself as "dad on deck." He cooks, cleans, picks his young daughter up from school, and makes plans to work on his house. He emphasized the point that he does not own a boat in his personal life—"I would rather have a friend with a boat" (which he does).

As with many of these *Drilling Dispatch* interviews, there was one topic that we couldn't avoid: what's next for Jake after this phase of the International Ocean Discovery Program ends. He describes the announcement as a "kick in the gut, hard news to hear." Of course, "it's time to start putting feelers out there because there's a big unknown after the program." But "I'm going to miss it without a doubt. You miss the crew that you're with for a long time, you miss the program... It really is a *great* program."

Obviously he plans to be a ship's captain—this ship's captain—for as long as he can. But if a career change becomes necessary?



TOP: Captain Robinson and his crew enjoy Christmas carols during Expedition 372 (Credit: Tim Fulton & IODP JRSO). MIDDLE: Captain Robinson describes his work during a ship-toshore connection with his daughter's school (Credit: Sandra Herrmann & IODP JRSO). BOTTOM: Captain Robinson poses with three long-time Siem employees to commemorate their retirement at the end of Expedition 391 (Credit: Sandra Herrmann & IODP JRSO).

"Maybe I should get into politics. Everyone thinks I'm right out here!"²

Spotlight on... Dr. H. Justin Ballenger

written by Maya Pincus (USSSP)

"Well... I think it kind of happened serendipitously..."

That's how Dr. Justin Ballenger responded when asked the most basic of interview questions: *How did you get here*? But what exactly is *here*? Well, most recently, *here* is aboard the *JOIDES Resolution* as an instructor of the <u>October 2023 School of Rock</u> workshop for educators.

Credit: 6 1 9 Studios

For those familiar with School of Rock, it is useful to note that this one was a bit different from previous iterations of the educator workshop. While the U.S. Science Support Program (USSSP) is continuing its partnership with the American Geosciences Institute to revise and update existing lesson plans and educational resources, what made the October 2023 School of Rock so special was an additional focus on increasing access to and inclusion in scientific ocean drilling. USSSP teamed up with the <u>Atlanta University</u> <u>Center Consortium</u> (AUCC) of Historically Black Colleges and Universities (HBCUs) to bring three instructors and five participants on board, where they were able to share unique insights about the diversification of STEM education and culturally responsive pedagogy.

Dr. Ballenger is an expert in this field and future workforce development. For the past two and half years he has been working under a dual appointment at the AUCC, as an assistant professor of STEM education at Morehouse College and an administrator of the <u>Atlanta University Center Data Science Initiative</u>. Though



he was satisfied with his previous position as a faculty member at Mercer University, he describes this new role as "a dream job for me." It's easy to see why he feels this way: He splits his time between teaching, mentoring K-12 STEM educators, conducting research with a focus on workforce development, and traveling the world to collaborate with other scientists. In a nutshell, "I really enjoy this space because it's one of the few places where you can imagine what you'd like to do and then go make it happen."

Dr. Ballenger with Atlanta University Center students before a meeting with Vice President Harris to discuss engagement with the National Space Council and workforce development (Credit: Justin Ballenger). It was obvious from a young age that Dr. Ballenger was destined for a career in STEM, though the education component would later. He has a vivid memory of an argument he had with his older sister about the picture on the front of her chemistry textbook: "I was probably four years old, and had just learned my colors and how they mix everything. On the cover of the chemistry book they were pouring two clear liquids into the beaker, and they were turning yellow. I argued with her that clear and clear don't make yellow. 'Yellow's a primary color you can't make it!" Dr. Ballenger remembers taking the book and trying to learn from it, "and at that point I was hooked."

At Clemson University he majored in biological science with a focus on ecosystems, and began his career as a field biologist studying bats and songbirds. While considering the possibility of working in a national park, he ended up taking a job as a long-term substitute high school biology teacher. "I just fell in love with that experience," he reminisced. And so he got his masters in education, taught for a few years, and then decided to pursue a doctorate degree in education as well. A formative part of this experience was his participation in the Call Me MiSTER (Mentors Instructing Students Toward Effective Role Models) program, which aims to increase students' access to diverse male mentors. Now he has the opportunity to pay it forward.

As he describes it, "My work is split between education and practitioners, so there's just so many opportunities for collaboration between both inservice and preservice teachers, and also for engaging scientific researchers in this work, and preparing the future workforce." That being said, it's difficult to believe that Dr. Ballenger has any free time between his many endeavors, but he makes it work. A family man through and through, he loves watching movies, hiking, "going on miniroad trips and adventures," and playing video games with his three children and wife. He also proudly identifies as a home gardener.

One of Dr. Ballenger's most enduring personality traits is his infectiously positive outlook. Multiple times throughout the interview he expressed, "I'm really excited about the outcome [of School of Rock], I feel like it was a really successful trip," explaining in more detail that "This has really been a great





TOP: Dr. Ballenger and his wife, Hope, in Iceland during School of Rock (Credit: Justin Ballenger). BOTTOM: Dr. Ballenger and his family (Credit: Justin Ballenger).

thing because it created connections for the teachers that work [in Atlanta], work that we're doing as faculty [at AUCC], wrapped that all into a real-world context, and further expanded the network." Another result of the workshop is that Dr. Ballenger is already looking forward: "I'm thrilled to connect with the JR and IODP. I can't wait for the future possibilities and opportunities for all of those we are here to serve."

Call for contributions

If there's one thing that can be said about the International Ocean Discovery Program (and the Integrated Ocean Drilling Program, and the Ocean Drilling Program, and the Deep Sea Drilling Program), it's that we are a tight-knit community. Just as much as this newsletter is for you, we want it to be from you, too! In future editions we will highlight our readers by featuring the following community contributions:

- From the Field Have you had an experience with scientific ocean drilling that you want to share? Write a piece to tell us your perspective "from the field" for our next edition. Bonus points if you include some pictures!
- **Scientist Spotlight** Do you know someone who's making waves in the ocean drilling scene, whether it's a grad student or accomplished scientist? Send us a nomination! Briefly tell us why this person deserves a shout-out, and ideally how to get in touch with them. Self-nominations are also accepted.
- Photo Montage We'll take any photos you want to share!
- **Creative COREner** Scientists are creators too! Send in your paintings, drawings, digital designs, poems, short stories, sculptures, or any other ocean science art you've made.

Send your contributions (and questions and concerns) to **mpincus@ldeo.columbia.edu** no later than November 20, 2023 to be featured in next month's newsletter.

See you next month!